MICROSCAN

MS-96 Vial Reader User's Guide

v3.2.0, Feb 2009

EM-20357-1V320

Copyright and Disclaimer
Copyright ©2009 by Microscan Systems, Inc.
1201 S.W. 7th Street, Renton, WA, U.S.A. 98057
(425) 226-5700 FAX: (425) 226-8682

All rights reserved. The information contained herein is proprietary and is provided solely for the purpose of allowing customers to operate and/or service Microscan manufactured equipment and is not to be released, reproduced, or used for any other purpose without written permission of Microscan.

Throughout this manual, trademarked names might be used. Rather than place a trademark (™) symbol at every occurrence of a trademarked name, we state herein that we are using the names only in an editorial fashion, and to the benefit of the trademark owner, with no intention of infringement.

Disclaimer
The information and specifications described in this manual are subject to change without notice.

Latest Manual Version
For the latest version of this manual, see the Download Center on our web site at: www.microscan.com.

Technical Support
For technical support, email: helpdesk@microscan.com.

Microscan Systems, Inc.
1201 S.W. 7th Street
Renton, WA 98057
U.S.A.
Tel: 425 226 5700
Fax: 425 226 8250
helpdesk@microscan.com

Microscan Europe
Tel: 31 172 423360
Fax: 31 172 423366

Microscan Asia Pacific
R.O. Tel: 65 6846 1214
Fax: 65 6846 4641

Microscan Limited Warranty Statement and Exclusions

What Is Covered?
Microscan Systems Inc. warrants to the original purchaser that products manufactured by it will be free from defects in material and workmanship under normal use and service for a period of one year from the date of shipment. This warranty is specifically limited to, at Microscan's sole option, repair or replacement with a functionally equivalent unit and return without charge for service or return freight.

What Is Excluded?
This limited warranty specifically excludes the following: (1) Any products or parts that have been subject to misuse, neglect, accident, unauthorized repair, improper installation, or abnormal conditions or operations; (2) Any products or parts that have been transferred by the original purchaser; (3) Customer mis-adjustment of settings contrary to the procedure described in the Microscan Systems Inc. owners manual; (4) Upgrading software versions at customer request unless required to meet specifications in effect at the time of purchase; (5) Units returned and found to have no failure will be excluded; (6) Claims for damage in transit are to be directed to the freight carrier upon receipt. Any use of the product is at purchaser's own risk. This limited warranty is the only warranty provided by Microscan Systems Inc. regarding the product. Except for the limited warranty above, the product is provided "as is." To the maximum extent

permitted by law, this express warranty excludes all other warranties, express or implied, including but not limited to, implied warranties of merchantability and. Technical support questions may be directed to: helpdesk@microscan.com Register your product with Microscan: www.microscan.com/register fitness for a particular purpose. Microscan Systems Inc. does not warrant that the functions contained in the product will meet any requirements or needs purchaser may have, or that the product will operate error free, or in an uninterrupted fashion, or that any defects or errors in the product will be corrected, or that the product is compatible with any particular machinery.

Limitation of Liability

In no event shall Microscan Systems Inc. be liable to you or any third party for any special, incidental, or consequential damages (including, without limitation, indirect, special, punitive, or exemplary damages for loss of business, loss of profits, business interruption, or loss of business information), whether in contract, tort, or otherwise, even if Microscan Systems Inc. has been advised of the possibility of such damages. Microscan Systems Inc.'s aggregate liability with respect to its obligations under this warranty or otherwise with respect to the product and documentation or otherwise shall not exceed the amount paid by you for the product and documentation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages or limitations on an implied warranty, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which may vary from state to state.

Tel: 425.226.5700 | Fax: 425.226.8250 | helpdesk@microscan.com

Contents

CHAPTER 1 Before You Begin... **1-1**

MS-96 Vial Reader Hardware Components **1-1**
Operating System **1-2**
Monitor Resolution **1-2**
Recommended Tools **1-2**
Related Documentation **1-2**

CHAPTER 2 Installing Hardware & Software **2-1**

Installing Hardware **2-2**
- Installing the 0300 Framegrabber & Cables 2-2
- Connecting Cables 2-4

Installing Software **2-6**
- Installing Visionscape® and MS-96 Vial Reader Software 2-6

Troubleshooting **2-6**
- Adjusting the Sensor 2-6
- Adjusting the Light Intensity 2-8
- Testing the MS-96 Vial Reader 2-9

CHAPTER 3 MS-96 Vial Reader Overview **3-1**

Modes **3-2**
Vialreader.ini **3-2**

INI File Keys Not Accessible Through the Program **3-4**
Modifying a Key 3-5

CHAPTER 4 Menus, Buttons, & Options **4-1**

Menus **4-2**
Enter Password 4-2
File Menu 4-3
Modify AVP File 4-3
Select Another AVP File 4-9
Save Current AVP Job to File 4-10
Create an Automatically Learned AVP 4-10
Manually Create a New AVP File 4-11
Modify Data File Format 4-14
Modify Image File Format 4-15
Change Data File Folder 4-16
Change Image File Folder 4-17
Configure Menu 4-17
Comm Settings 4-18
Failure Message 4-18
Printer Settings 4-19
Program Timers 4-20
Select Trigger 4-21
About Menu 4-21
Buttons **4-22**
Turn Live Video On 4-23
Read Box Data Matrix 4-23
Show Complete Box 4-23
Create Array Text File 4-25
Create One Column File 4-26
Print Label 4-26
Save Images 4-27
View Contrast Values 4-27
Run Once 4-28
Reset Counts 4-28
Quit 4-28
Checkboxes **4-29**
Always Create Files 4-29
Always Print A Label 4-29
Pass/Fail Based on the Number of Vials Decoded 4-29
When the Checkbox is Checked 4-29

When the Checkbox is Not Checked 4-31
Beep On Read 4-32
Fields **4-32**
Fail Inspections 4-32
Pass Inspections 4-32
Process Time (ms) 4-33
Total Inspections 4-33
Total Time (ms) 4-33
Text Boxes **4-33**
File Base Name 4-33
Number Expected 4-34
Read Complete 4-34
Options **4-34**
Rack Density 4-34

APPENDIX A Setting Up the Zebra Printer **A-1**

APPENDIX B MS-96 Vial Reader ActiveX API **B-1**

Properties **B-2**
Methods **B-3**
Events **B-3**

Index **Index-1**

Contents

1

CHAPTER 1

Before You Begin...

Before you install your MS-96 Vial Reader hardware and software, make sure you have all of the necessary components. This chapter helps you prepare for a successful installation.

MS-96 Vial Reader Hardware Components

The MS-96 Vial Reader hardware may be purchased in two configurations:

- The MS-96 Vial Reader with 10 foot cable
- The MS-96 Vial Reader with 25 foot cable

The MS-96 Vial Reader with 10 foot cable consists of the following:

TABLE 1–1. MS-96 Vial Reader w/10 Foot Cable Hardware Components

Qty	Part #	Description
1	PCI-10020	PCI-0300 Analog Video digitizer
1	286-019603	MS-96 Vial Reader reader head with 10 foot cable
1	030-014700	Camera cable, 10 foot
1	010-015900	I/O cable, 10 foot
1	030-012400	Internal I/O cable

The MS-96 Vial Reader with 25 foot cable consists of the following:

TABLE 1–2. MS-96 Vial Reader w/25 Foot Cable Hardware Components

Qty	Part #	Description
1	PCI-10020	PCI-0300 Analog video digitizer
1	286-019600	MS-96 Vial Reader reader head with 25 foot cable
1	030-014701	Camera cable, 25 foot
1	030-015901	I/O cable, 25 foot
1	030-012400	Internal I/O cable

Operating System

You can use the MS-96 Vial Reader with the following operating systems:

- Windows 2000 SP4
- Windows XP SP2

Monitor Resolution

The screen resolution for your MS-96 Vial Reader system should be set to 1024 x 768.

Recommended Tools

- A screwdriver set

Related Documentation

We suggest that you start with this manual and then refer to the following manuals that are included on the CD:

- PCI-0300 Analog Video Digitizer User Manual
- Visionscape® User's Manual

CHAPTER 2

Installing Hardware & Software

This chapter describes how to install the MS-96 Vial Reader hardware, the Visionscape® and MS-96 Vial Reader software, and how to troubleshoot the system.

Specifically, this chapter describes:

- "Installing Hardware" on page 2-2
- "Installing Software" on page 2-6
- "Troubleshooting" on page 2-6

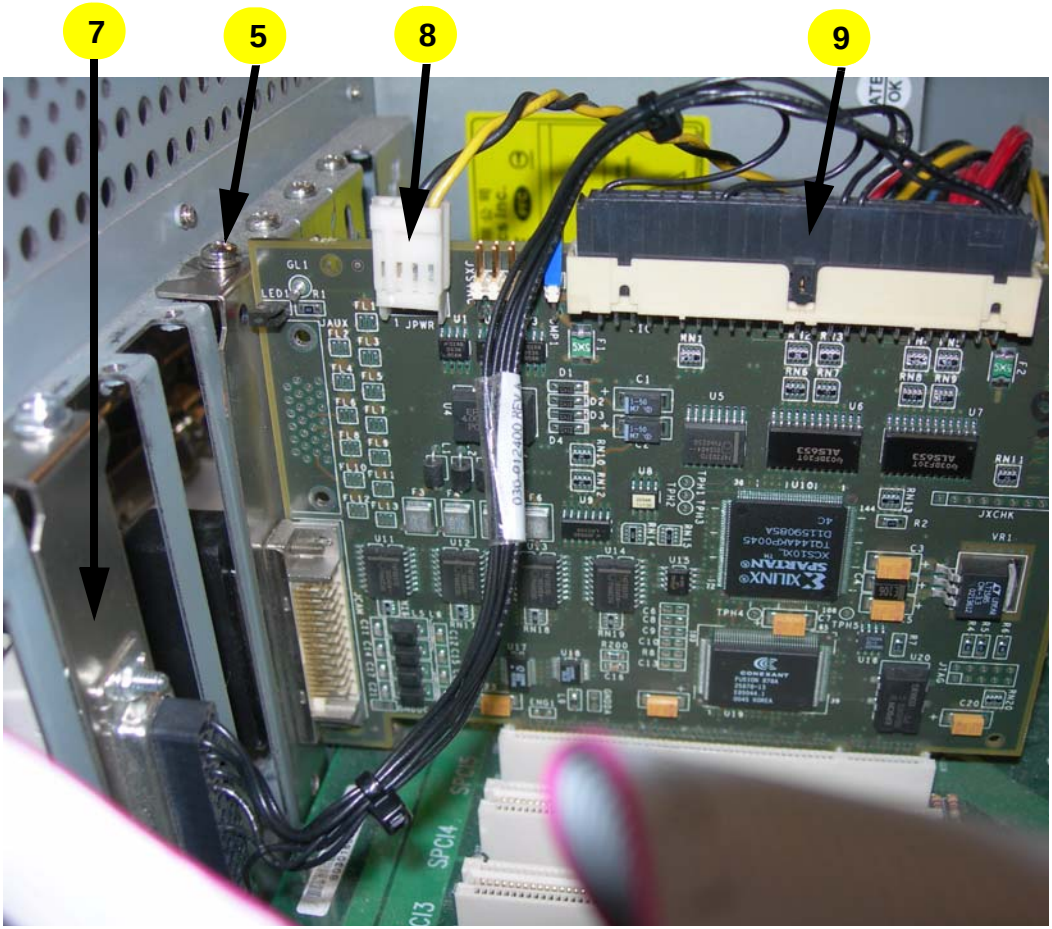
Installing Hardware

Installing the 0300 Framegrabber & Cables

Use the following procedure to install the framegrabber and cables:

1. Remove the cover of the PC.
2. Locate an open PCI slot.
3. Unscrew a port access cover on the PC.
4. Install the 0300 framegrabber board by aligning the gold fingers and pressing the module firmly into the slot.
5. Fasten the 0300 framegrabber board with a port access screw (see Figure 2–1).
6. Unscrew another port access cover on the PC.
7. Insert the internal I/O connector into the open port access cover (see Figure 2–1).

FIGURE 2–1. Installing the 0300 and the Internal I/O Connector & Cable



8. Install the camera power connector that is supplied with your board (see Figure 2–1). Make sure the other end is connected to PC power.

9. Install the internal I/O cable (see Figure 2–1).

10. Replace the cover of the PC.

Connecting Cables

Use the following procedure to connect the MS-96 Vial Reader cables:

1. Connect the power cord, network cable (if used), mouse and keyboard to the PC.

2. Connect one end of the camera cable (P/N 030-014700) to the MS-96 Vial Reader reader head, as shown in Figure 2–2.

FIGURE 2–2. MS-96 Vial Reader Reader Head — Back Face

3. Connect the 9 pin end of the trigger cable (P/N 010-015900) to the 9 pin connector on the MS-96 Vial Reader reader head, as shown in Figure 2–2.

4. Connect the camera cable (P/N 030-014700) and the other end of the trigger cable (P/N 010-015900) to the back of the PC, as shown in Figure 2–3.

FIGURE 2–3. PC with Cables Attached

5. Boot the PC. Check for the red light from the sensor in the back left corner of the MS-96 Vial Reader reader head.

Note: If the red light from the sensor is not on, re-check the connection between the camera cable and sensor cable on both ends. If this does not turn on the sensor, check the internal power connection to the 0300 board.

Installing Software

Installing Visionscape® and MS-96 Vial Reader Software

Use the following procedure to install the Visionscape® V3.7.2 and MS-96 Vial Reader software:

1. Insert the CD (provided) into a CD drive on the PC or in another PC accessible via your local intranet.
2. Connect to the CD drive. If the CD drive is **local**, the web page interface will be shown automatically. If the CD drive is **not local**, select SETUP.HTML.
3. From the web page interface, select Visionscape Studio 3.7.2.
4. After the Visionscape® installation is complete, the PC must be rebooted. When the reboot process is finished, the HTML page should be displayed again.
5. Select MS-96 Vial Reader 3.2.0 to install the MS-96 Vial Reader program. You must accept the Microscan End User License Agreement and may specify an installation location during the installation.

The installation is now complete.

Troubleshooting

This section contains specific information about the following:

- "Adjusting the Sensor" on page 2-6
- "Adjusting the Light Intensity" on page 2-8
- "Testing the MS-96 Vial Reader" on page 2-9

Adjusting the Sensor

Use the following procedure to adjust the sensor:

1. Place a keyed rack of vials atop the MS-96 Vial Reader reader head.
2. Wait for the read to complete.

3. Push the rack to the front right corner.

4. Notice the screw and two LEDs on the back of the MS-96 Vial Reader reader head, as shown in Figure 2–4.

FIGURE 2–4. MS-96 Vial Reader Reader Head

5. Adjust the screw until the yellow sensor light is on and blinking slowly.

6. Rotate the rack 180°. The sensor should not trigger a read.

7. Push the rack of vials to the back left corner. The sensor should not trigger a read.

8. If either of these two conditions trigger a read, adjust the sensor until the yellow light is not lit. Repeat this procedure starting at step 1.

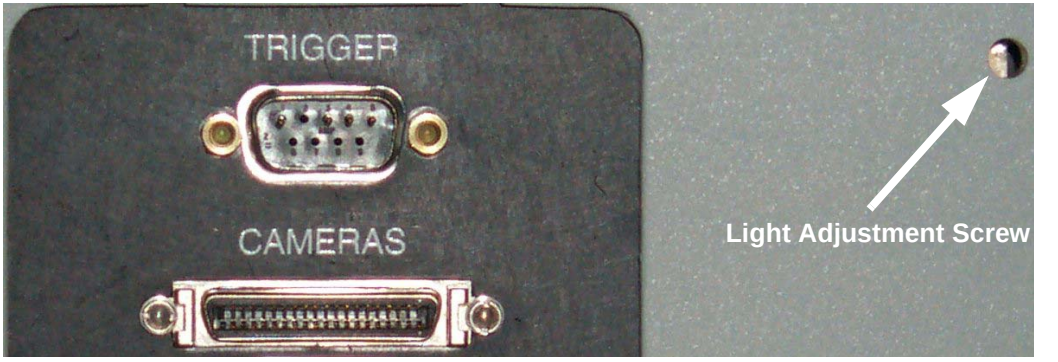
Adjusting the Light Intensity

The light intensity may be adjusted by rotating the screw accessible from the back of the MS-96 Vial Reader reader head.

Use the following procedure to adjust the light intensity:

1. With the MS-96 Vial Reader software running, enter the password.
2. Click on the Turn Live Video On button to turn on live video.
3. Place a rack on the MS-96 Vial Reader reader head.
4. To reduce the light intensity, rotate the light adjustment screw **counter-clockwise** (see Figure 2–5).
5. To increase the light intensity, rotate the light adjustment screw **clockwise** (see Figure 2–5).

FIGURE 2–5. Light Adjustment Screw



6. When the matrices are clearly visible, turn live video off (by clicking on the Turn Live Video Off button).
7. Remove and replace the rack on the MS-96 Vial Reader reader head to trigger a cycle.
8. Click on the Show Complete Box button.
9. Check the Contrast Values Enabled checkbox.
   - For **light on dark** matrices, the contrast should be between 75 and 100.
   - For **dark on light** matrices, the contrast should be between 25 and 45.

Testing the MS-96 Vial Reader

Use the following procedure to test the MS-96 Vial Reader:

1. With the PC booted, and the MS-96 Vial Reader running, place a rack of vials atop the MS-96 Vial Reader reader head. The red LEDs should illuminate. When the read is complete, remove the rack of vials.
2. Push the rack of vials to each of the four corners, pressing the Run Once button after each move.
3. Trigger the read using the hardware trigger.
4. Ensure that the system reads all the vials under all of these conditions.

3

CHAPTER 3

MS-96 Vial Reader Overview

The MS-96 Vial Reader Data Matrix reading system collects images from a rack of either 24 or 96 pipettes and provides a text array of string values that can be output to a text file or retrieved through ActiveX calls.

The program starts a Visionscape® AVP backplane to determine whether or not an acceptable framegrabber exists, connects to the framegrabber, opens the previously saved AVP file, and awaits a trigger. The trigger is user configurable to be either the sensor on the top of the MS-96 Vial Reader reader head, the completion of a bar code read from a reader attached to a serial port of the PC running the software, or an input through ActiveX. After a trigger is received, the LED lights illuminate the bottom of the rack, images are taken, images are processed to determine the contents of the Data Matrix codes, the lights are turned off, and the results are ready for display and transmission.

Modes

You can operate the MS-96 Vial Reader in one of two modes:

- Supervisor — This mode enables menus and buttons that are not enabled in Operator mode. You can create, modify, and save AVP files. You can modify formats for data files and image files. You can also adjust settings for communications and printing.
- Operator — In this mode, you can read vials, and save information to a text file, but you cannot adjust settings. The following menus and buttons are disabled:
  - File menu
  - Configure menu
  - Run Once button
  - Save Images button
  - Turn Live Video On/Off button

Vialreader.ini

An example of the vialreader.ini file is shown below:

```
[Password]
ProgrammersPassword=password

[Form_Defaults]
AlwaysCreateFile=False
AlwaysPrint=False
BeepOnRead=False
BoxDisplayViewTop=True
CheckNumber=True
DataFileDir=C:\Program Files\VialReader\Data
DisableOverwriteWarningMessage=False
DisablePasswordMode=False
FailureMessage=Decode Failure
FilenameBaseDefault=
HideUI=False
ImageFileDir=C:\Program Files\VialReader\Images
```

```
IncludeDataFileBase=True
IncludeImageFileBase=True
NumberExpected=96
OneColTextFile2LineHeader=False
RackDensity=96
SettleTime=250
TriggerDelay=150
TriggerType=0
UseDefaultDataFilenameFormat=True
UseDefaultImageFilenameFormat=True
VerifyRackInPlaceToOutputData=False

[RS232]
CommPort=0
Baud=9600
Parity=N
DataBits=8
StopBits=1

[Zebra_Format]
LabelLength=500
LabelHomeX=0
LabelHomeY=0
FieldOriginX=100
FieldOriginY=100
DMOrientation=N
ElementSize=5
PrinterDotsPerMM=6
LabelUnits=dots

[AVP_Info]
Filename24=C:\Program Files\VialReader\24Default.avp
Filename96=C:\Program Files\VialReader\96Default.avp
```

INI File Keys Not Accessible Through the Program

There are seven INI file keys that you cannot modify from the user interface. These keys are intended to solve specific customer concerns.

- ProgrammersPassword (String) — This is the string that allows entry to the functionality hidden for the general users.
- DisableOverwriteWarningMessage (Boolean) — With this value set to "True", saving a text file to the same name will not generate a warning message by the software. The default is "False".
- DisablePasswordMode (Boolean) — Setting this key to "True" will cause the program to always display the controls enabled by correctly entering the password. Also, the Password menu item is not visible. The default is "False".
- FilenameBaseDefault (String) — This value will be placed into the *File Base Name:* textbox at program startup. The default for this setting is "" (null string).
- HideUI (Boolean) — This key can be used with the ActiveX support to cause the Initializing splash screen and the UI to not be visible upon program startup. The default is "False".
- OneColTextFile2LineHeader (Boolean) — Setting this key to "True" causes the one column text file to suppress the second line of the header of the file. This provides compatibility to the previous versions of the text file which expect only a single header line. The default is "False".
- VerifyRackInPlaceToOutputData (Boolean) — This key determines whether or not the data should be output on the condition that the trigger sensor was only tripped momentarily. If True, the program checks for a positive state on the sensor before outputting the data to the counters, the text files, the ActiveX output or the printer.

Modifying a Key

To modify a key:

1. Close the MS-96 Vial Reader program.
2. Open the INI file with a text editor.
3. Change to the appropriate key.
4. Save the file.
5. Exit the text editor.
6. Restart the MS-96 Vial Reader software.

4

CHAPTER 4

Menus, Buttons, & Options

The MS-96 Vial Reader operates in either Supervisor mode or Operator mode. Supervisor mode offers you more menus and more buttons. In Operator mode, the following menus and buttons are disabled:

- File menu
- Configure menu
- Run Once button
- Save Images button
- Turn Live Video On/Off button

The remainder of this chapter describes:

- "Menus" on page 4-2
- "Buttons" on page 4-22
- "Checkboxes" on page 4-29
- "Fields" on page 4-32
- "Text Boxes" on page 4-33
- "Options" on page 4-34

Menus

This section describes the following menus:

- "Enter Password" on page 4-2
- "File Menu" on page 4-3
- "Configure Menu" on page 4-17
- "About Menu" on page 4-21

Enter Password

Click Enter Password (or press Alt-P) to display the Password dialog box, as shown in Figure 4–1.

FIGURE 4–1. Password Dialog Box

1. Enter the password and click OK.

   Note: The default password is "password."

   After you click on the OK button, the following occurs:

   – You are placed into Supervisor mode.

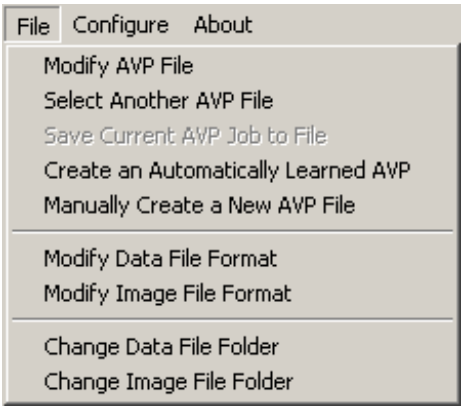
   – The File and Configure menus are displayed.

   – The Turn on Live Video, Save Images, and Run Once buttons are displayed.

Note: To change the password, you must edit the ProgrammersPassword entry in Vialreader.ini.

File Menu

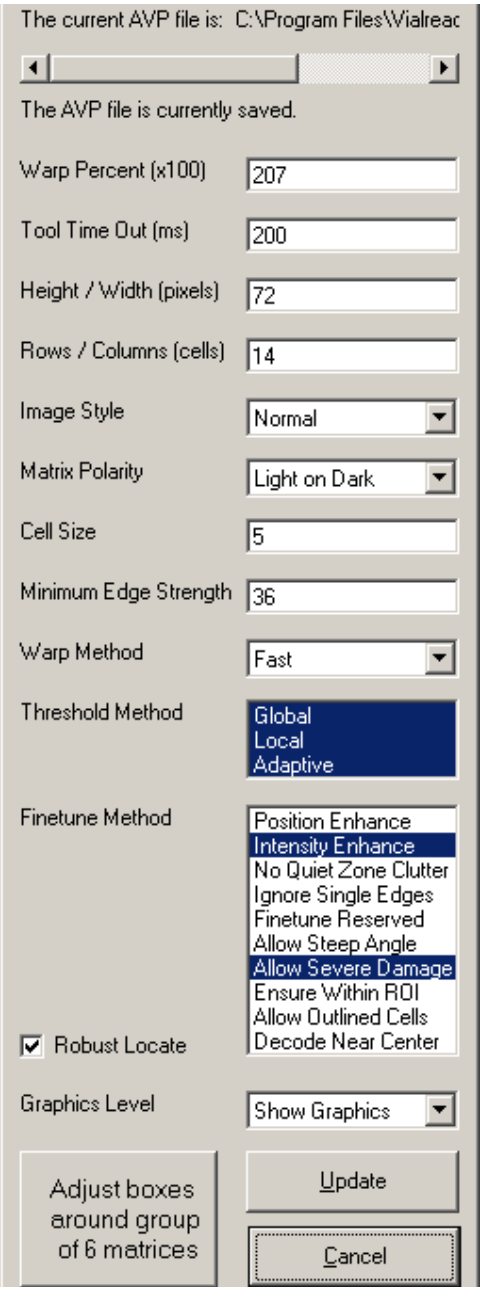
FIGURE 4–2. File Menu



Modify AVP File

When you select this menu item, the Enter Data Matrix Datums dialog box is displayed, as shown in Figure 4–3.

FIGURE 4–3. Enter Data Matrix Datums Dialog Box



Datums

Note: The Automatic Learning function (File > Create Automatically Learned AVP) eliminates the need for you to adjust individual parameters. Use it to set these parameters.

The following datums are listed alphabetically.

- Cell Size — The nominal width and height of a matrix cell in pixels. A matrix cell is the individual dark or light area that represents a binary 0 or 1. The goal for proper tuning of the system is 5.

  Range: 2 - 20

- Finetune Method — The options are:

  – Allow Outlined Cells — Enabling this option helps the algorithm decode a Data Matrix with outlined cells only. In this case, the On and Off cells have little or no contrast but they are separated by edges of the cells. The default is Off.

    Note: Not suggested for use with the MS-96 Vial Reader.

  – Allow Severe Damage — Enabling this option will increase the robustness of the software in reading data matrices with severe border damage.

    Note: This option may allow an increased population of Data Matrices to be read and is recommended for the MS-96 Vial Reader.

  – Allow Steep Angle — In some Data Matrix reading applications, it is not possible to set up the camera such that the focal plane is parallel with the surface of the Data Matrix label. When the focal plane and the label surface form a steep angle, the Data Matrix in the image will have severe geometrical distortion.

    Note: Not suggested for use with the MS-96 Vial Reader.

  – Decode Near Center — The camera tries to read the symbol that is closest to the center of the FOV. The default is Off.

    Note: This option may allow an increased population of Data Matrices to be read and is recommended for the MS-96 Vial Reader.

– Ensure Within ROI — Enabling this option ensures that no Data Matrix is located unless it is fully inside the ROI. The default is Off.

  Note: Not suggested for use with the MS-96 Vial Reader.

– Ignore Single Edges — This option causes the decoder to ignore single edges during the Data Matrix locate process. This speeds up the locate process in the presence of unrelated lines found in the image near the Data Matrix. The defaults is Off.

  Note: Not suggested for use with the MS-96 Vial Reader.

– Intensity Enhance — This option is used to read marks of poor quality. For example, some data matrices may be marked so poorly that some cells are almost invisible compared to the rest of the cells. Using this option may help decode some marginal data matrices.

  Note: This option may allow an increased population of matrices to be read and is recommended for the MS-96 Vial Reader.

– No Quiet Zone Clutter — This default option will attempt to locate a Data Matrix even if the background is noisy and cluttered. When the Data Matrix is printed on a clean background, enabling this option will increase the locating process speed.

  Note: Not suggested for use with the MS-96 Vial Reader.

– Position Enhance — This option attempts to reduce the number of error correction bits used during decoding.

  Note: Not suggested for use with the MS-96 Vial Reader.

• Graphics Level — This datum selects the amount of graphics displayed at the completion of step execution. The options are:

  – Show Graphics — When enabled, Data Matrix locating graphics and any decoded text will be displayed.

  – Show None — When enabled, no graphics are drawn.

• Height/Width (pixels) — The height/weight of the matrix in pixels. The goal for proper training of the system has this parameter set to 5 to 5.5 times the row/column value.

  Range: 30 to 600 (0 for Unknown)

- Image Style — The options are:
  - Auto — Both Image Style types are decodable.
  - Mirror — The Data Matrix is viewed as a mirror image.
  - Normal — The Data Matrix is viewed as is.
- Matrix Polarity — This datum specifies the border and background color orientation. Options include:
  - Auto — Both Matrix Polarity types are decodable.
  - Dark on Light — Dark cells on a light background.
  - Light on Dark — Light cells on a dark background.
- Minimum Edge Strength — This datum informs the algorithm to search for the edge of a matrix whose intensity exceeds this value.

  Range: 5 to 100
- Robust Locate — When enabled, the system will first look for a matrix matching the given specifications. If it fails to find a matrix, the matrix size parameters will be relaxed and the system will try to find the matrix up to two more times.

  Note: This parameter may allow an increased population of matrices to be read and is recommended for the MS-96 Vial Reader.

- Rows/Columns (cells) — The number of matrix rows and columns including the border cells. The MS-96 Vial Reader only works with square matrices.

  Range: 0 - 144
- Threshold Method — Local or Adaptive cannot replace Global because each is slower and less stable than Global for most of the applications. By **default**, all three selections are enabled:
  - Adaptive — May produce better decode results when the background of the matrix is uneven due to marking or lighting.

– Global — A single threshold value is used to determine if a cell is dark or light for all cells.

– Local — May yield less error used in the error correction algorithm when matrix rows or columns are not equally spaced.

Note: Selecting all three methods may allow an increased population of matrices to be read and is recommended for the MS-96 Vial Reader.

- Tool Time Out (ms) — This datum is the maximum time to search for a matrix. When a matrix is not found and decoded by this time, this step fails and the program execution continues.

Note: Typically, this parameter does not require adjustment for the proper operation of the MS-96 Vial Reader.

Range: 0 - 2000

- Warp Method — This datum specifies the matrix warping method.

  – Fast — Increase the reading speed. Uses approximation to reduce the computation time. This may produce a higher error bit rate than Slow.

  – Slow (Default) — Enable when receiving a high error bit rate.

Note: Selecting the slow warp may allow an increased population of matrices to be read and is recommended for the MS-96 Vial Reader.

- Warp Percent (x100) — This datum enlarges the captured image before the Data Matrix decode tools are run. The maximum allowed value of 500% is 25 times as large as the original image within the input ROI. Selecting a scale factor can improve performance of the tools placed within it, since the image will be tuned for the Data Matrix algorithm's preferred size.

  Typically, the best performance for the MS-96 Vial Reader can be achieved with settings between 150 and 250, depending upon the physical cell size of the matrices.

  The tuning goal of the system is to set the Warp Percent to a value such that the matrices are sized at ~5 x rows. Currently, this value can only be

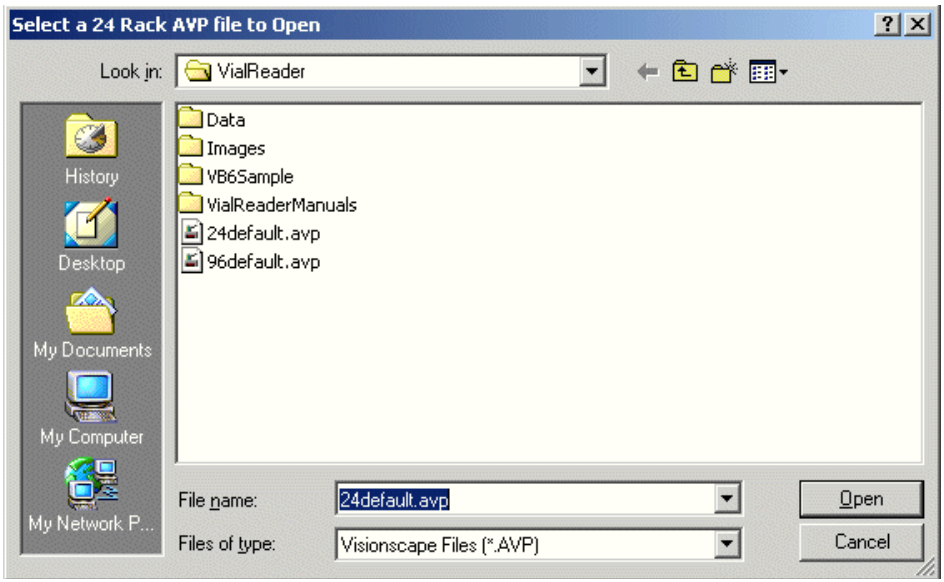
derived by opening the AVP file in AppFactory and being set by someone familiar with AppFactory.

Range: 50 - 500

Select Another AVP File

When you select this menu item, the Select an AVP File to Open dialog box is displayed, as shown in Figure 4–4.

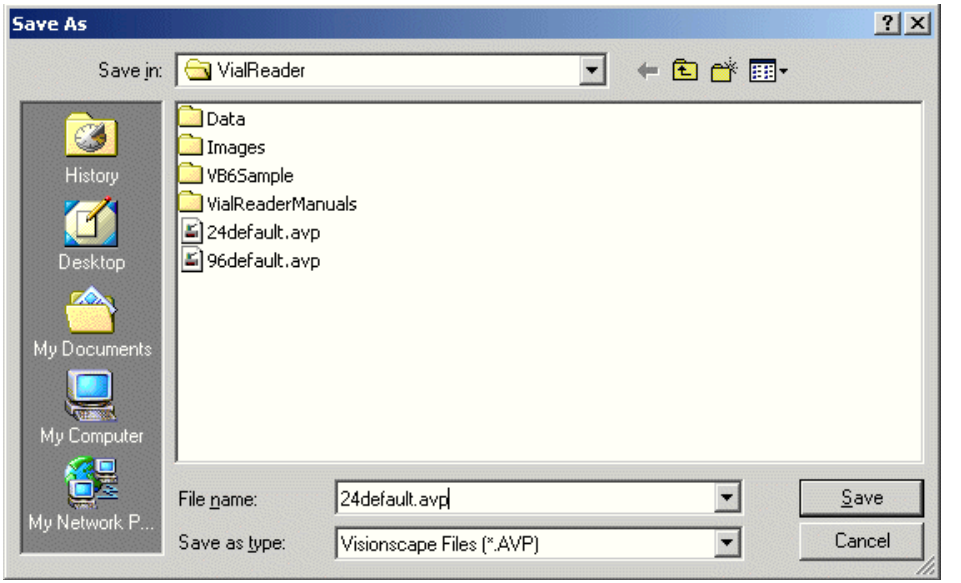
FIGURE 4–4. Select an AVP File to Open Dialog Box



Save Current AVP Job to File

When you select this menu item, the Save Current AVP Job to File dialog box is displayed, as shown in Figure 4–5.

FIGURE 4–5. Save Current AVP Job to File Dialog Box



Note: Save the job with the density information as part of the text of the job as the 24 and 96 density jobs are not interchangeable.

Create an Automatically Learned AVP

Prior to running each individual read head, we recommend that a specific vision job (AVP extension file) be created for each read head you have for either or both of the two densities you will be running. This step will assure that any individual camera variations are corrected for in your specific vision job.

1. Enter the password for the MS-96 Vial Reader program (the default is “password”).

2. Place a full rack of vials with Data Matrix codes on top of the MS-96 Vial Reader reader head.

3. Ensure the density of the rack is set to the density of the rack in place on the MS-96 Vial Reader reader head.

4. Select File > Create an Automatically Learned AVP File.

5. When the job creation process is complete, save the new AVP file with a unique name.

6. Repeat this procedure for the other density rack if you will be using both densities.

7. Repeat this procedure for any other MS-96 Vial Reader reader heads as needed.

Manually Create a New AVP File

When you select this menu item, a dialog prompts you to enter the Data Matrix parameters for the codes currently on the MS-96 Vial Reader reader head. Then, the program steps through setting the RectWarp locations for the four cameras. We recommend that you use this option only should the automatic learn function not work properly. At the completion of the adjustment cycle, an option for saving the file is presented. We strongly recommend that you save the file at this time with a unique name.

Adjusting the Boxes Around the Groups of Vials

Use the following procedure to adjust the boxes around the groups of vials:

1. Place a keyed rack of vials atop the MS-96 Vial Reader reader head.

2. Click Enter Password. The default password is “password”.

3. Click File and Modify AVP.

4. Select Adjust Box Around Groups of Vials.

5. Move the box so that the X-Y locator is centered in the middle of the array of 6 vials (3 across and 2 down), as shown in Figure 4–6, or 24 vials (6 across and 4 down), as shown in Figure 4–7.

FIGURE 4–6. Centering the X-Y Locator (24 Vials)

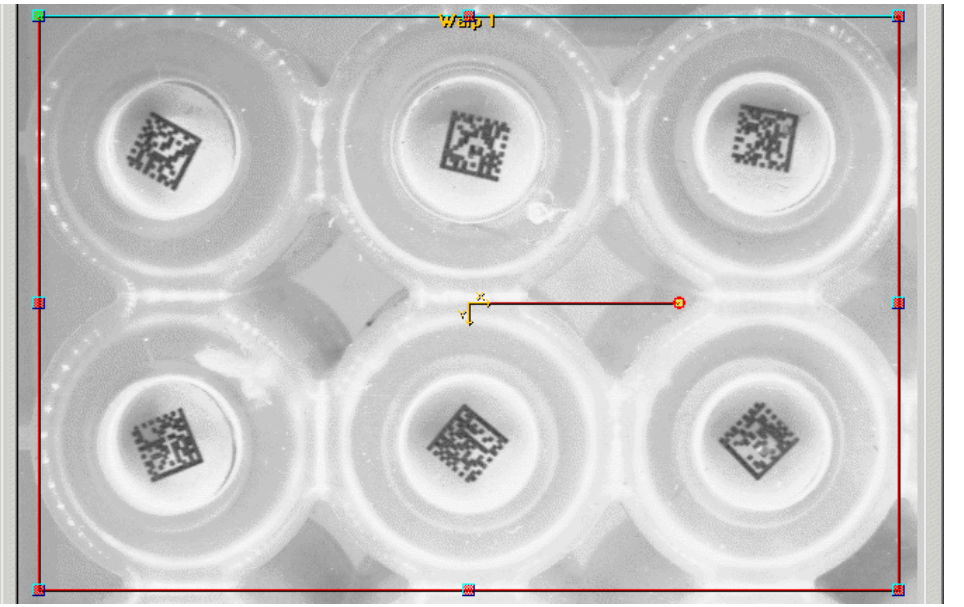
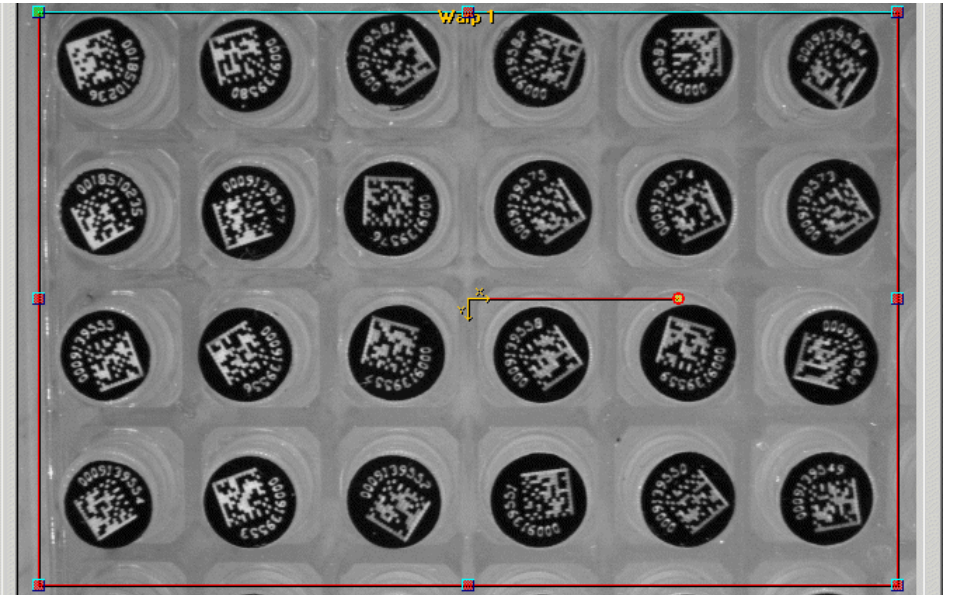


FIGURE 4–7. Centering the X-Y Locator (96 Vials)



6. Adjust the rotation of the box to ensure that the box is square with the group of vials.

7. Adjust the sides of the box so that the RectWarp movement handles are centered on the middle column divider vertically and the middle row divider horizontally.

8. Click OK.

9. Repeat steps 5 through 8 three times (for cameras 2 through 4).

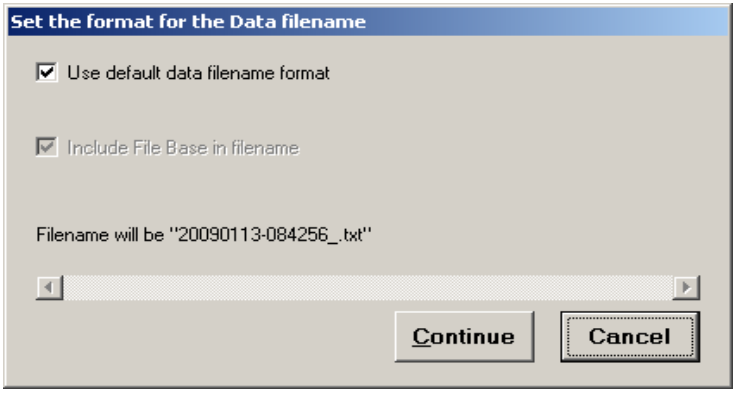
10. From the initial screen, click Update. When asked if you wish to save the file, click Yes, and save the file using a new, unique name.

11. Test this adjustment by placing a rack atop the MS-96 Vial Reader reader head and determining if all vials are read.

Modify Data File Format

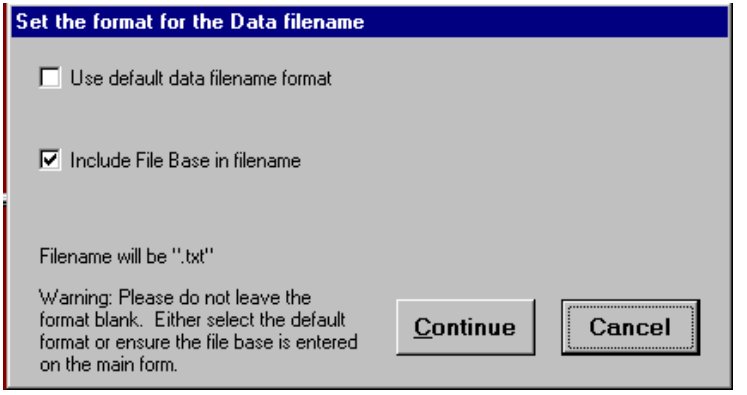
When you select this menu item, the Set the format for the Data filename dialog box is displayed, as shown in Figure 4–8.

FIGURE 4–8. Set the Format for the Data Filename Dialog Box



If you uncheck Use default date filename format, you will see the screen shown in Figure 4–9. Don't overlook the Warning displayed in Figure 4–9.

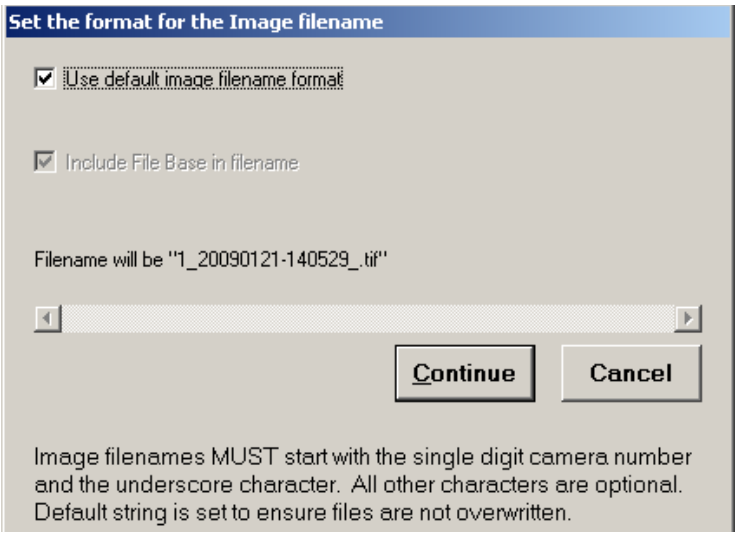
FIGURE 4–9. Use data filename format Unchecked


Set the format for the Data filename
Use default data filename format
Include File Base in filename
Filename will be ".txt"
Warning: Please do not leave the format blank. Either select the default format or ensure the file base is entered on the main form.
Continue
Cancel

Modify Image File Format

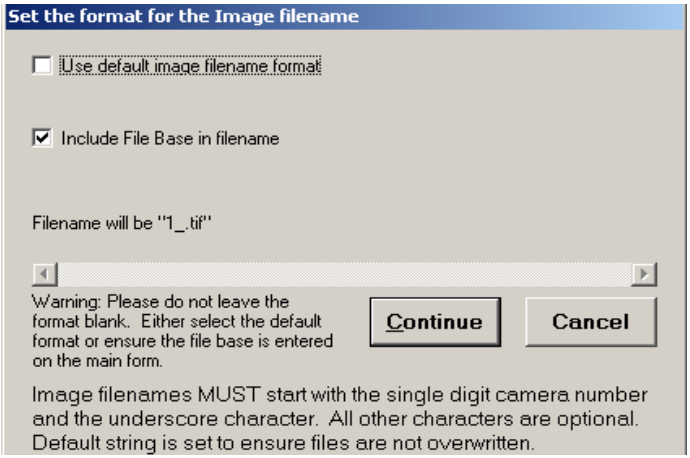
When you select this menu item, the Modify Image File Format dialog box is displayed, as shown in Figure 4–10.

FIGURE 4–10. Set the Format for the Image Filename


Set the format for the Image filename
Use default image filename format
Include File Base in filename
Filename will be "1_20090121-140529_.tif"
Continue
Cancel
Image filenames MUST start with the single digit camera number and the underscore character. All other characters are optional. Default string is set to ensure files are not overwritten.

If you uncheck Use default image filename format, you will see the screen shown in Figure 4–11. Don't overlook the Warning displayed in Figure 4–11.

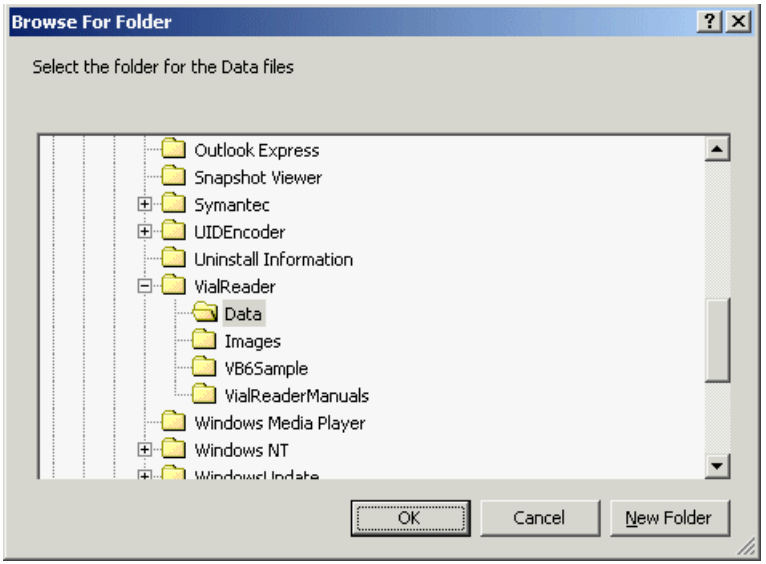
FIGURE 4–11. Use default image filename format Unchecked


Set the format for the Image filename
Use default image filename format
Include File Base in filename
Filename will be "1_.tif"
Warning: Please do not leave the format blank. Either select the default format or ensure the file base is entered on the main form.
Continue
Cancel
Image filenames MUST start with the single digit camera number and the underscore character. All other characters are optional. Default string is set to ensure files are not overwritten.

Change Data File Folder

When you select this menu item, the Select folder for data files dialog box is displayed, as shown in Figure 4–12.

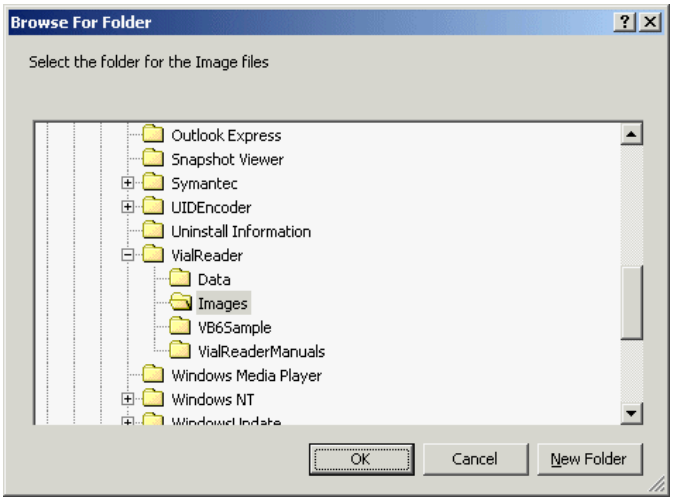
FIGURE 4–12. Select Folder for Data Files Dialog Box



Change Image File Folder

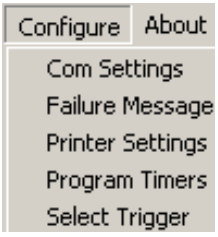
When you select this menu item, the Select folder for image files dialog box is displayed, as shown in Figure 4–13.

FIGURE 4–13. Select Folder for Image Files Dialog Box



Configure Menu

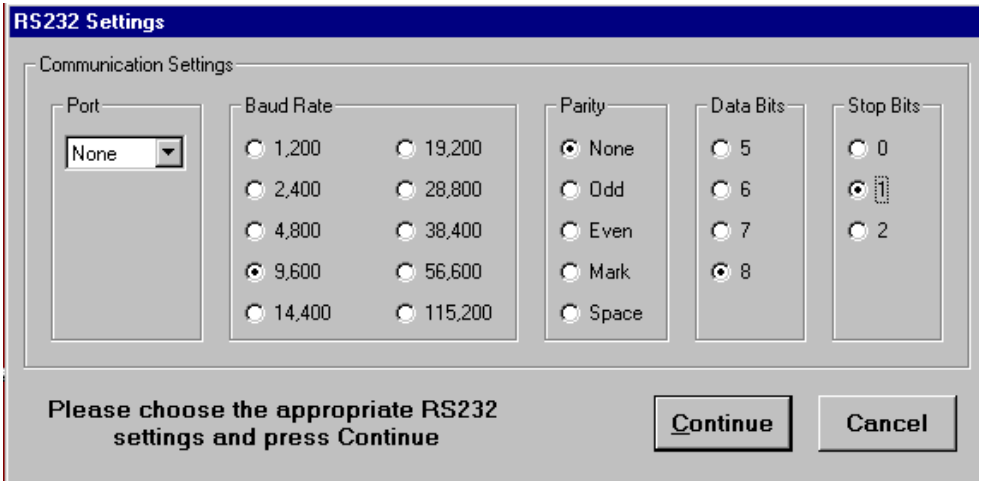
FIGURE 4–14. Configure Menu



Comm Settings

When you select this menu item, the RS232 Settings dialog box is displayed, as shown in Figure 4–15.

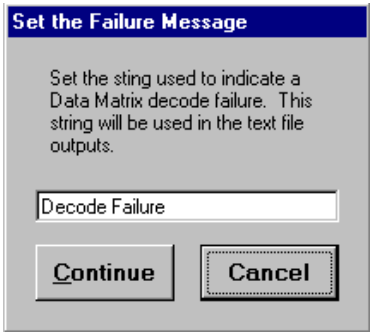
FIGURE 4–15. RS232 Settings Dialog Box



Failure Message

When you select this menu item, the Set the Failure Message dialog box is displayed, as shown in Figure 4–16.

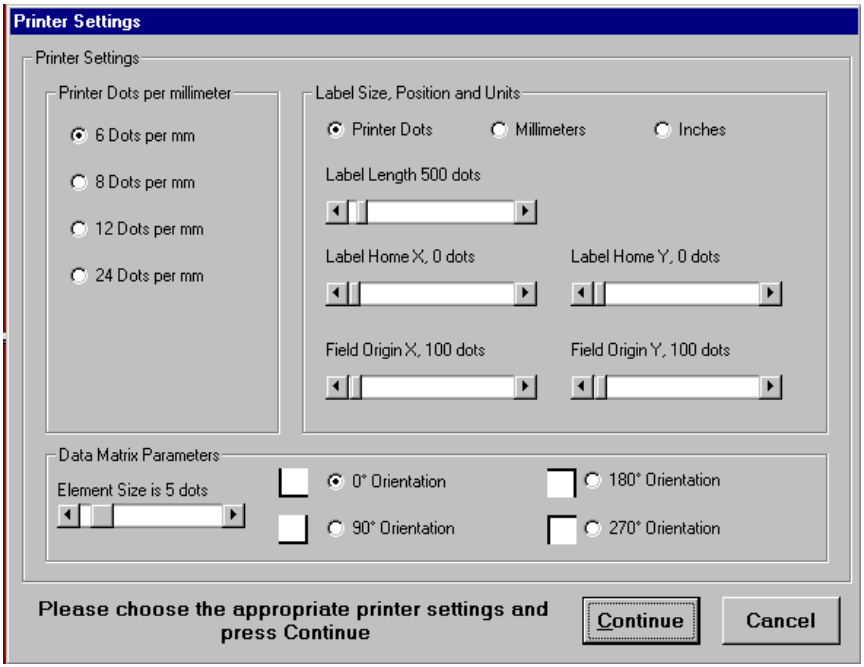
FIGURE 4–16. Set the Failure Message Dialog Box


Set the Failure Message
Set the sting used to indicate a Data Matrix decode failure. This string will be used in the text file outputs.
Decode Failure
Continue
Cancel

Printer Settings

When you select this menu item, the Printer Settings dialog box is displayed, as shown in Figure 4–17.

FIGURE 4–17. Printer Settings Dialog Box



- Printer Dots Per Millimeter — This parameter sets the software to the density capability of the printer.
- Units — This parameter sets the units for the current setup.
- Label Length — This parameter sets the label length. Click the white space to the right of the slider to increment 10 dots at a time.

  Range: 1 - 9999 dots
- Label Home X/Y — This parameter sets the label location. Click the white space to the right of the slider to increment 10 dots at a time.

  Range: 0 - 9999 dots

- Field Origin X/Y — This parameter sets the field origin. Click the white space to the right of the slider to increment 10 dots at a time.

  Range: 0 - 9999 dots

- Element Size — This parameter sets the size of each Data Matrix element (cell) in terms of printer dots.

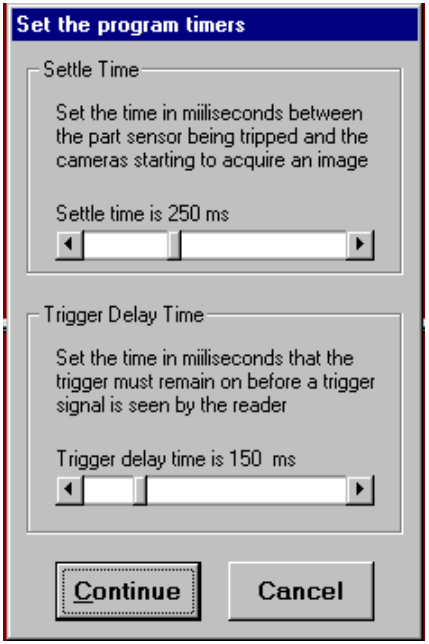
  Range: 1 - 50 dots

- Orientation — This parameter sets the orientation of the Data Matrix on the label.

Program Timers

When you select this menu item, the Set the Program Timers dialog box is displayed, as shown in Figure 4–18.

FIGURE 4–18. Set the Program Timers Dialog Box


Set the program timers
Settle Time
Set the time in milliseconds between the part sensor being tripped and the cameras starting to acquire an image
Settle time is 250 ms
Trigger Delay Time
Set the time in milliseconds that the trigger must remain on before a trigger signal is seen by the reader
Trigger delay time is 150 ms
Continue
Cancel

- Settle Time — This parameter specifies the time, in milliseconds, between the part sensor being tripped and the camera starting to acquire an image. Click the white space to the right of the slider to increment 10 ms at a time.

Range: 1 - 750 ms

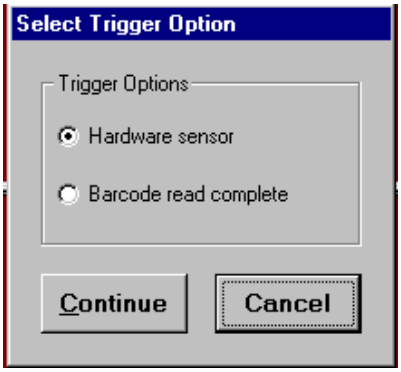
- Trigger Delay Time — This parameter specifies the time, in milliseconds, that the trigger must remain on before a trigger signal is seen by the MS-96 Vial Reader reader. Click the white space to the right of the slider to increment 10 ms at a time.

  Range: 1 - 750 ms

Select Trigger

When you select this menu item, the Select Trigger Options dialog box is displayed, as shown in Figure 4–19.

FIGURE 4–19. Select Trigger Options Dialog Box



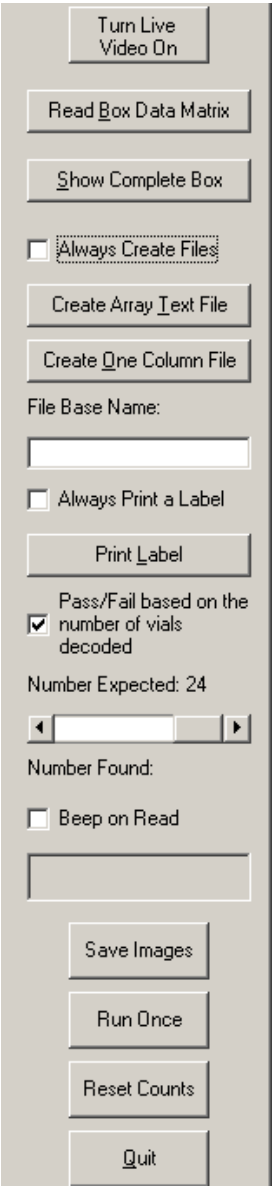
- Hardware sensor — This parameter uses the integral sensor on the MS-96 Vial Reader reader head to initiate a read cycle when a rack is placed on the MS-96 Vial Reader reader head in the proper orientation.
- Barcode read complete — This parameter initiates a read cycle when a string is received from the currently selected serial port. If no serial port is selected, then this may not be selected.

About Menu

The About Menu displays the Microscan address, phone number, and fax number.

Buttons

FIGURE 4–20. MS-96 Vial Reader Buttons



Turn Live Video On

This is a toggle. When you click this button, all other buttons and all menu items are disabled, and the button changes to Turn Live Video Off. When you click this button again, all other buttons and all menu items are enabled, and the button changes to Turn Live Video On.

Read Box Data Matrix

If the RS232 port is initialized, this button allows a single Data Matrix containing the data from a complete rack to be read at once by using a hand held reader connected to the serial port. Then, the data is displayed on the screen.

Show Complete Box

This button displays the information from the last rack read. If the information shown is from the rack on the MS-96 Vial Reader reader head, then "Read Complete" on a green background is displayed on the screen below the Beep on Read checkbox.

The Show Complete Box button offers two views, top and bottom. Select the view using the Top and Bottom checkboxes in the View Perspective area of the box. The view you select is saved and provided the next time you click on the Show Complete Box button.

If you are in Supervisor mode, the Contrast Values Enabled checkbox is enabled. See Figure 4–21 and Figure 4–22.

FIGURE 4–21. Data String Display Window (24 Vials)

	1	2	3	4	5	6	
A	500012JLQ	500012JNT	500012JUN	500012JUL	500012JPB	500012JUJ	A
B	500012JTP	500012JUQ	500012JUP	500012JPA	500012JRM	500012JRA	B
C	500012JQK	500012JQC	500012JTG	500012JPM	500012JVP	500012JUM	C
D	500012JTJ	500012JNJ	500012JVR	500012JNX	500012JMA	500012JQL	D

FIGURE 4–22. Data String Display Window (96 Vials)

	1	2	3	4	5	6	7	8	9	10	11	12	
A	0001443240	0001445472	0001445471	0001445470	0001445469	0001445468	0001445467	0001444385	0001445465	0001445464	0001445463	0001444407	A
B	0001444383	0001444384	0001444386	0001445453	0001444387	0001445455	0001444388	0001444389	0001444390	0001444392	0001444391	0001444393	B
C	0001445449	0001445448	0001445447	0001445446	0001445445	0001445444	0001445443	0001445442	0001445441	0001445440	0001445439	0001445438	C
D	0001444359	0001444360	0001444361	0001444364	0001444362	0001445431	0001445432	0001445433	0001444366	0001444363	0001444368	0001445437	D
E	0001445425	0001445424	0001445423	0001445422	0001445421	0001445420	0001445419	0001445418	0001445417	0001445416	0001445415	0001445414	E
F	0001443238	0001444367	0001445404	0001444337	0001444365	0001444369	0001445408	0001445409	0001444336	0001445411	0001445412	0001444343	F
G	0001443239	0001445400	0001445399	0001445398	0001445397	0001445396	0001445395	0001445394	0001445393	0001445392	0001445391	0001445390	G
H	0001445378	0001444335	0001444338	0001444339	0001444344	0001444342	0001444341	0001444340	0001445386	0001444322	0001445388	0001443237	H

Create Array Text File

This button creates a file with 8 lines of data, each with 12 elements, comma delimited, and terminated with a CRLF pair. The first element in the array is A1, followed by A2, A3 through H12. For example:

000144001,000144002,000144003,000144004,000144005...
000144013,000144014,000144015,000144016,000144017...
000144025,000144026,000144027,000144028,000144029...
000144037,000144038,000144039,000144040,000144041...
000144049,000144050,000144051,000144052,000144053...
000144061,000144062,000144063,000144064,000144065...
000144073,000144074,000144075,000144076,000144077...
000144085,000144086,000144087,000144088,000144089...

By default, the array text file will be located in the following directory:

drive:\Program Files\VialReader\Data

You can modify the location using the Change Data File Folder menu item.

Depending upon the selected file format, the array text file name will be the text you entered into the File Base Name text box plus the .txt file extension. For example:

First Batch.txt

Note: If you click on the Create Array Text File button, and the File Base Name text box is empty, an error is displayed. You must enter text in the File Base Name text box before you click on the Create Array Text File button.

If you create a file with a name that already exists, a warning message, asking you if the file should be overwritten, is displayed. To disable this message, set the "DisableOverwriteWarningMessage" key to False in the [Form_Defaults] section of the Vialreader.ini file.

For more information about creating files, see "Always Create Files" on page 4-29.

Create One Column File

This button creates a one column text file where each element in the rack is identified by row and column label, such as A1. For example:

Date & time of Trace: 04 Jan 2002 11:10:09 AM

Rack Base Name:

A01; 0001443240

A02; 0001445472

.

.

.

H12; 0001443237

The one column text file will be located in the following directory:

drive:\Program Files\VialReader\Data

You can modify the location using the Change Data File Folder menu item.

Depending upon the selected file format, the one column text file name will be the text you entered into the File Base Name text box, plus _1Col, plus the .txt file extension. For example:

First Batch_1Col.txt

Note: If you click on the Create One Column File button, and the File Base Name text box is empty, an error is displayed. You must enter text in the File Base Name text box before you click on the Create One Column File button.

If you create a file with a name that already exists, a warning message, asking you if the file should be overwritten, is displayed. To disable this message, set the "DisableOverwriteWarningMessage" key to False in the [Form_Defaults] section of the Vialreader.ini file.

For more information about creating files, see "Always Create Files" on page 4-29.

Print Label

This button prints the label to the Zebra printer

Save Images

This button saves the four images taken by the four cameras as .TIF files. The files are located in the directory specified by the Create A New AVP Job menu item. By default, the file naming convention is:

`1_Current Date_Current Time_File Base.tif`

View Contrast Values

When you click on this button, the View Contrast Values window is displayed, as shown in Figure 4–23 and Figure 4–24.

FIGURE 4–23. View Contrast Values Window (24 Vials)

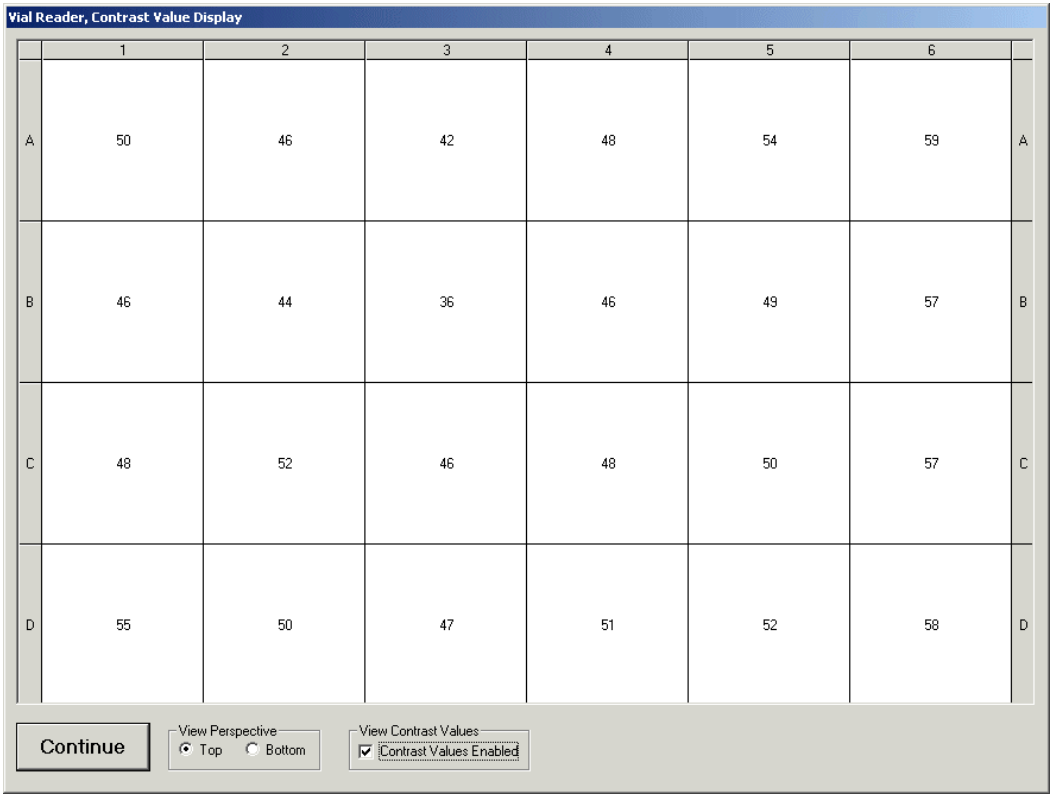
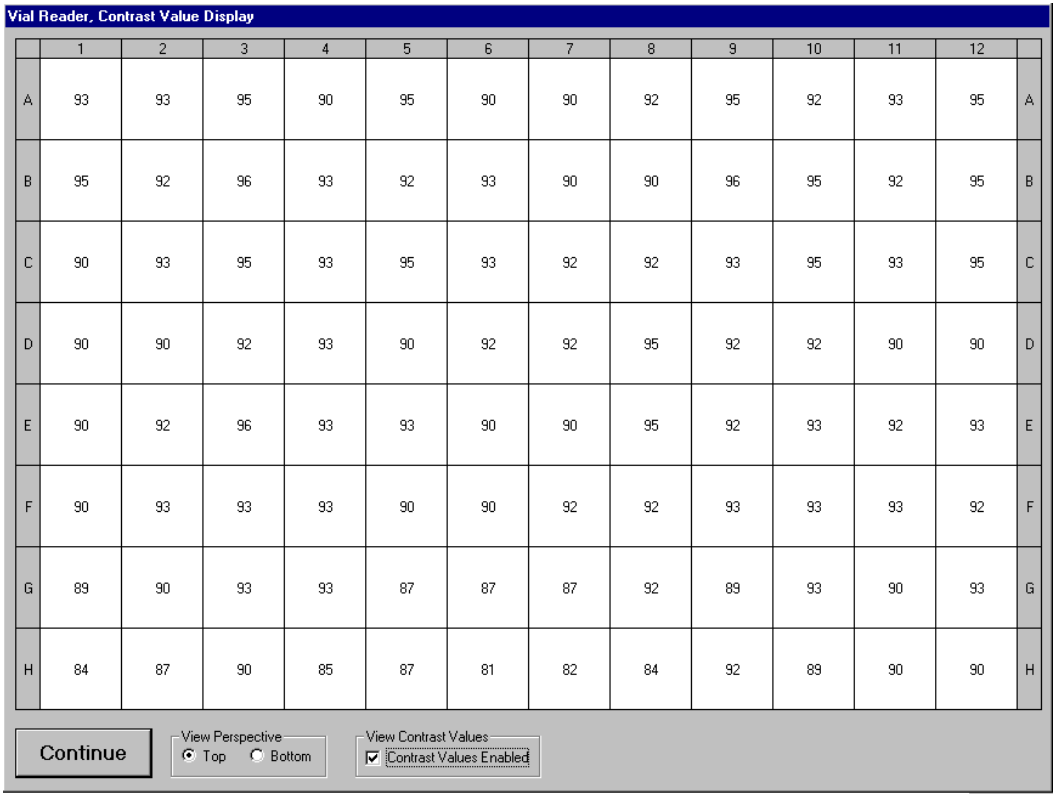

Vial Reader, Contrast Value Display
1 2 3 4 5 6
A 50 46 42 48 54 59 A
B 46 44 36 46 49 57 B
C 48 52 46 48 50 57 C
D 55 50 47 51 52 58 D
Continue
View Perspective
Top
Bottom
View Contrast Values
Contrast Values Enabled

FIGURE 4–24. View Contrast Values Window (96 Vials)



Run Once

This button allows you to cycle the Vial Read once.

Reset Counts

This button resets the Total Inspections, Good Inspections, and Bad Inspections to zero (0).

Quit

This button closes the MS-96 Vial Reader. You have to select `Yes` to close the MS-96 Vial Reader.

Checkboxes

Always Create Files

When this checkbox is checked, the MS-96 Vial Reader creates an array text file and a one column text file upon the completion of every cycle. For more information about the array text file, see “Create Array Text File” on page 4-25. For more information about the one column text file, see “Create One Column File” on page 4-26.

Always Print A Label

When this checkbox is checked, the MS-96 Vial Reader creates a single Data Matrix containing the complete information from a rack. It prints a label containing this matrix to a previously configured Zebra™ bar code printer at the completion of each read cycle. See Appendix A, “Setting Up the Zebra Printer,” for information about setting up a print driver for this function.

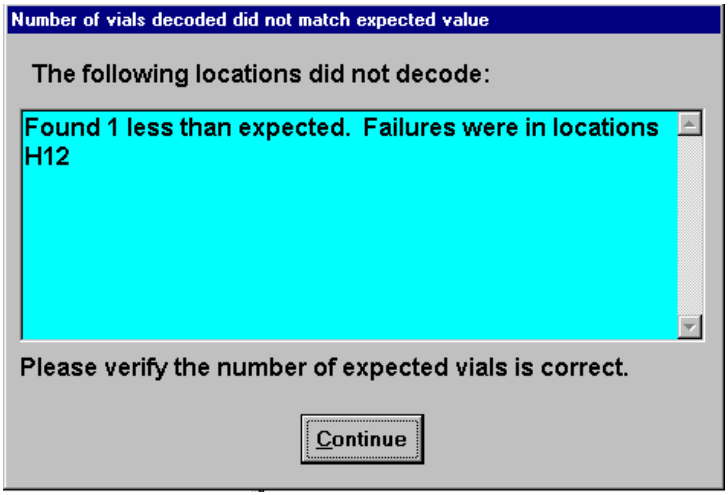
Pass/Fail Based on the Number of Vials Decoded

When this checkbox is checked, the MS-96 Vial Reader compares the number of successful Data Matrix decodes to the expected value. If there is a difference, the cycle is considered a failure and an error message is posted.

When the Checkbox is Checked

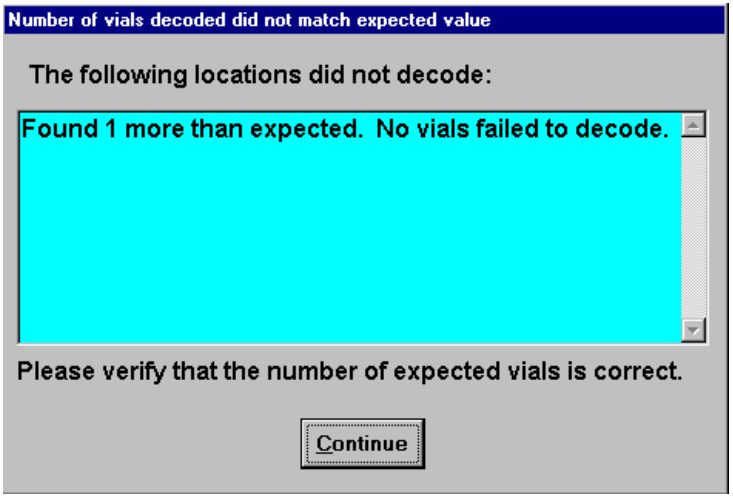
If the number of expected decodes is less than the number decoded, and the Pass/Fail based on the number of vials decoded checkbox is checked, a screen similar to the one in Figure 4–25 is displayed.

FIGURE 4–25. Expected Decodes Less Than Number Decoded


Number of vials decoded did not match expected value
The following locations did not decode:
Found 1 less than expected. Failures were in locations H12
Please verify the number of expected vials is correct.
Continue

If the number of expected decodes is greater than the number decoded, and the Pass/Fail based on the number of vials decoded checkbox is checked, a screen similar to the one in Figure 4–26 is displayed.

FIGURE 4–26. Expected Decodes Greater Than Number Decoded


Number of vials decoded did not match expected value
The following locations did not decode:
Found 1 more than expected. No vials failed to decode.
Please verify that the number of expected vials is correct.
Continue

When the Checkbox is Not Checked

If the number of expected decodes is greater than the number decoded, and the Pass/Fail based on the number of vials decoded checkbox is not checked, a screen similar to the one in Figure 4–27 or Figure 4–28 is displayed.

FIGURE 4–27. No Extra Message Box Displayed (24 Vials)

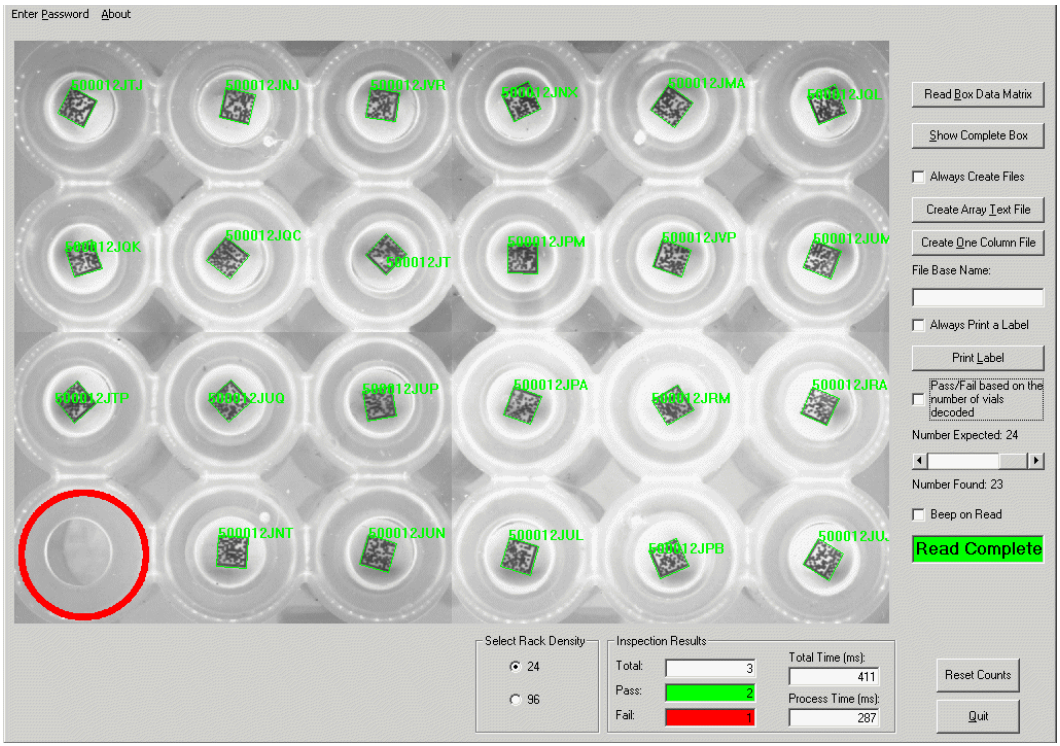
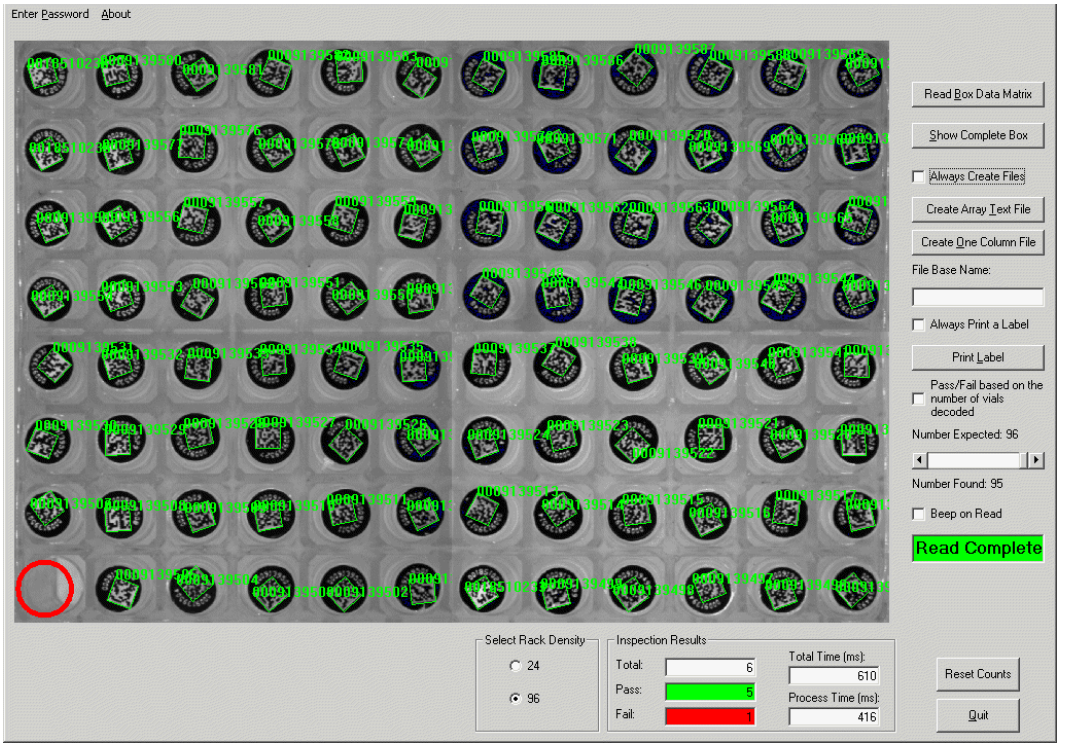


FIGURE 4–28. No Extra Message Box Displayed (96 Vials)



Beep On Read

When this checkbox is checked, the PC beeps at the completion of a read.

Fields

Fail Inspections

This field displays the total number of inspections that failed.

Pass Inspections

This field displays the total number of inspections that passed.

Process Time (ms)

This field displays the time (in milliseconds) for the vision tools to run.

Total Inspections

This field displays the total number of inspections that occurred since either the program started or the counters were reset.

Total Time (ms)

This field displays the time (in milliseconds) from the trigger initiation until the data is ready.

Text Boxes

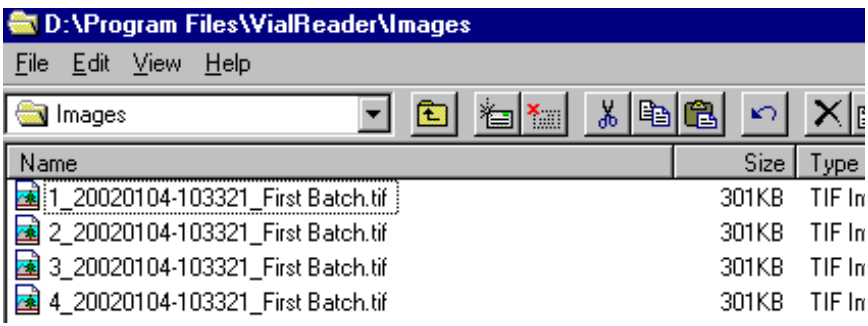
File Base Name

This text box contains the characters that you want to be included in each of the file names for the saved data and image files.

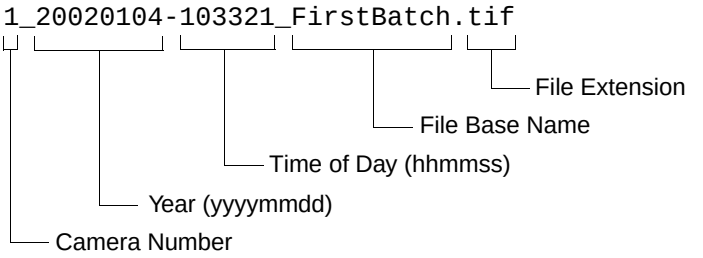
Note: These characters are invalid: \ / : * ? " < > |

For example, assume you type “First Batch” into the File Base Name text box. After you click on the Save Images button, the directory *drive:*`\Program Files\VialReader\Images` will contain the files shown in Figure 4–29.

FIGURE 4–29. File Base Name Example



Notice the format of the file name:



Note: To have default text entered into the file name base when the program first starts, add that text, without punctuation, to the "FilenameBaseDefault" key in the [Form_Defaults] section of the Vialreader.ini file. For example, to have "My_file" show in the File Base Name text box at startup, the entry in the Vialreader.ini file should be:

FilenameBaseDefault=My_file

Number Expected

This horizontal scroll bar sets the expected number of matrixes that will be decoded in a single cycle. This scroll bar is used in conjunction with the Pass/Fail Based on the Number of Vials Decoded check box to pass or fail a rack.

Read Complete

This text box illuminates when a read is finished, and remains illuminated until you remove the rack from the read head.

Options

Rack Density

This option box sets the density of the vials in the rack. The choices are 24 and 96.

A

APPENDIX A

Setting Up the Zebra Printer

Use the following procedure to set up the Zebra printer:

1. Select Start > Settings > Printers > Add Printer.

   The Add Printer Wizard is displayed.

2. Select My Computer, and click on Next.

3. Select LPT1: and click on Next. (We'll redirect the printer output to the network later to actually see it.)

4. Under "Manufacturers," scroll down and select Generic.

5. Under "Printers," select Generic / Text Only, and click on Next.

6. Keep the existing driver (if it exists), and click on Next.

7. Set the "Printer Name" to include the text "Zebra," select No for making this the default printer, and click on Next.

8. Select Not Shared, and click on Next.

9. Select No for a test page, and click on Finish.

10. If the system asks for the location of the driver file, enter:

    drive:\Program Files\Vialreader\

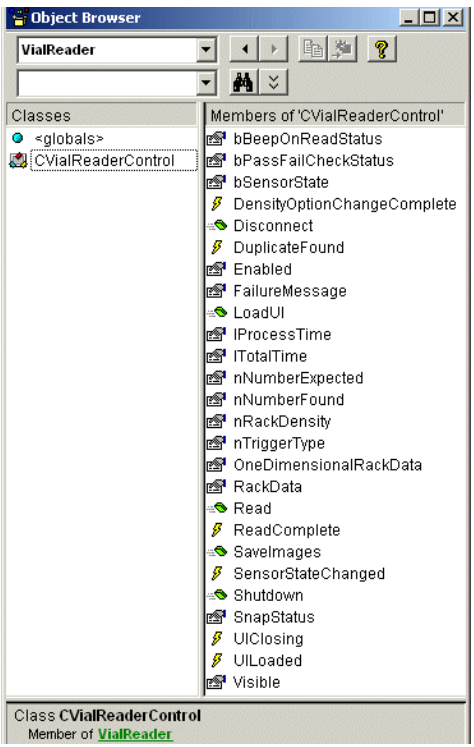
    and select UNIDRV.DLL in that directory.

Appendix A Setting Up the Zebra Printer

APPENDIX B

MS-96 Vial Reader ActiveX API

FIGURE B–1. ActiveX API Window



Properties

- bBeepOnReadStatus() As Boolean — Boolean value that specifies whether the PC speaker sounds at the completion of a read cycle.
- bPassFailCheckStatus() As Boolean — Boolean value that specifies whether the cycle passes or fails based on the count of the matrices read.
- bSensorState() As Boolean — Boolean value of the current sensor state. True means the sensor is triggered.
- Enabled() As Boolean — Boolean value that specifies whether the UI allows user interaction.
- FailureMessage() As String — String value used when the Data Matrix is not decoded.
- lProcessTime() As Long — Long value of one cycle process time in milliseconds (read only).
- lTotalTime() As Long — Long value of one cycle time from trigger through data availability in milliseconds (read only).
- nNumberExpected() As Integer — Integer value of the number of matrices expected for a successful read.
- nNumberFound() As Integer — Integer value of the number of data matrices decoded (read only).
- nTriggerType() As Integer — Integer value for trigger types. 0 is hardware sensor, 1 is RS232 input, 2 is ActiveX.
- nRackDensity() As Integer — Integer value of density of vials in a single rack. Allowable values are 24 and 96.
- OneDimensionalRackData() As Variant — Variant array (24 or 96 zero based, depending upon the density) of the rack string data contents (read only).
- RackData() As Variant — Variant array (4, 6 or 8,12 zero based, depending upon the density) of the rack string data contents (read only).
- SnapStatus() As Variant — Variant array of Integer values of the four camera snapshots. 0 is success. All other values are errors (read only).

- Visible() As Boolean — Boolean value of whether the UI is visible.

Methods

- Disconnect() — Release control of the interface from the EXE process. The EXE process is not stopped.
- LoadUI() — Start the UI process.
- Read() — Perform a single read cycle on the EXE process.
- SaveImages() — Save the images from the last cycle to a file.
- Shutdown() — Start a timer that will shutdown the UI process in half a second.

Events

- DensityOptionChangeComplete() — Event is fired when the density option change has been completed by the EXE process.
- DuplicateFound(ByVal nCount As Integer, strDuplicates As String) — Event fired when duplicate data matrices are decoded from the same rack.
- ReadComplete() — Event fired when a read cycle is complete.
- SensorStateChanged(bState As Boolean) — Event fired when the hardware sensor changes state.
- UIClosing() — Event fired when the UI is closing.
- UILoaded() — Event fired when the UI load is complete.

Appendix B MS-96 Vial Reader ActiveX API

Index

A

About Menu 4-21
ActiveX B-1
Adjusting
  lighting intensity 2-8
  the sensor 2-6
Allow
  severe damage 4-5
Always
  create files 4-29
  print a label 4-29
Automatic Learning 4-5
AVP
  create
    an automatically learned 4-10
    manually 4-11

B

Barcode read complete 4-21
Baud Rate
  setting 4-18
Beep On Read 4-32
Buttons
  create
    array text file 4-25
    one column file 4-26
    one column text file 4-26
  quit 4-28
  read box data matrix 4-23
  reset counts 4-28
  run once 2-9, 4-28
  save images 4-27, 4-33
  show complete box 2-8, 4-23
  turn live video
    off 2-8
    on 2-8, 4-23

C

Cables
  connecting 2-4
Cell Size 4-5
Change
  data file folder 4-16
  image file folder 4-17
Checkboxes
  always create files 4-29
  always print a label 4-29
  beep on read 4-32
Comm Settings 4-18
Components 1-1, 1-2
Configure Menu 4-17
  comm settings 4-18
  failure message 4-18
  printer settings 4-19
  program timers 4-20
  select trigger 4-21
Connecting Cables 2-4
Create
  an automatically learned avp 4-10
  array text file 4-25
    button 4-25
  new avp manually 4-11
  one column
    file button 4-26
    text file 4-26

D
Data Bits
  setting 4-18
Decode Near Center 4-5
DisableOverwriteWarningMessage 3-4
DisablePasswordMode 3-4

E
Element Size 4-20
Enter Password 4-2

F
Fail
  based on the number of vials decoded 4-29
  inspections 4-32
Failure Message 4-18
Field Origin X/Y 4-20
Fields
  fail inspections 4-32
  pass inspections 4-32
  process time (ms) 4-33
  total inspections 4-33
File Base Name 4-33
File Menu 4-3
  change data file folder 4-16
  change image file folder 4-17
  modify avp file 4-3
  modify data file format 4-14
  modify image file format 4-15
  save current avp job to file 4-10
  select another avp file 4-9
FilenameBaseDefault 3-4
Finetune Method 4-5

H
Hardware
  components 1-1, 1-2
  sensor 4-21
Height/Width (pixels) 4-6
HideUI 3-4
Horizontal Scroll Bar
  number expected 4-34

I
Image Style 4-7
INI File Keys
  not accessible 3-4
Initialization File 3-2
Installing
  internal i/o connector 2-2
  ms-96 software 2-6
  software 2-6
  visionscape software 2-6
Intensity Enhance 4-6
Internal I/O Connector
  installing 2-2

K
Key
  modifying 3-5

L
Label
  home xy 4-19
  length 4-19
Light Intensity
  adjusting 2-8

M
Matrix Polarity 4-7
Menus
  about 4-21
  configure 4-17
  file 4-3
Minimum Edge Strength 4-7
Modes
  operator 3-2
  supervisor 3-2
Modify
  avp file 4-3
  data file format 4-14
  image file format 4-15
  key 3-5
Monitor Resolution 1-2
MS-96
  installing software 2-6
  testing 2-9

N
Number Expected
  horizontal scroll bar 4-34

O
OneColTextFile2LineHeader 3-4

Operator 3-2
Orientation 4-20

P
Parity
  setting 4-18
Pass
  based on the number of vials decoded 4-29
  inspections 4-32
Password
  enter 4-2
Printer
  dots per millimeter 4-19
  settings 4-19
Process Time (ms) 4-33
Program Timers 4-20
ProgrammersPassword 3-4

Q
Quit 4-28

R
Read
  box data matrix 4-23
  complete 4-34
Reset Counts 4-28
Resolution
  monitor 1-2
Robust Locate 4-7
Rows/Columns (cells) 4-7
Run Once Button 2-9, 4-28

S
Save
  current avp job to file 4-10
  images button 4-27, 4-33
Select
  another avp file 4-9
  trigger 4-21
Sensor
  adjusting 2-6
Setting Up Zebra Printer A-1
Settle Time 4-20
Show Complete Box Button 2-8, 4-23
Software
  installing 2-6
Stop Bits
  setting 4-18
Supervisor 3-2

T
Testing the MS-96 Vial Reader 2-9
Text Boxes
  file base name 4-33
  read complete 4-34
Threshold Method 4-7
Tool Time Out (ms) 4-8
Total Inspections 4-33
Trigger Delay Time 4-21
Troubleshooting 2-6
Turn Live Video
  off button 2-8
  on button 2-8, 4-23

U
Units 4-19

V
VerifyRackInPlaceToOutputData 3-4
Vialreader.ini 3-2
View
  contrast values 4-27
  perspective 4-23
Visionscape
  installing 2-6

W
Warp
  method 4-8
  percent (x100) 4-8

Z
Zebra Printer
  setting up A-1